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Search History

DATE: Thursday, October 27, 2005 [Printable Copy](#) [Create Case](#)

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<u>L20</u>	('20040243504')[URPN]	0	<u>L20</u>
<u>L19</u>	113 and (ticket near exchange or ticket with exchange or ticket adj exchange)	1	<u>L19</u>
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<u>L1</u>	(internet or www or network or web) and bett\$ with provider	1433	<u>L1</u>

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L24: Entry 13 of 18

File: USPT

Sep 2, 2003

US-PAT-NO: 6615188

DOCUMENT-IDENTIFIER: US 6615188 B1

**** See image for Certificate of Correction ****

TITLE: Online trade aggregating system

DATE-ISSUED: September 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Breen; Peter E.	Basking Ridge	NJ		
Macleod; Michael D.	New York	NY		
Tudisco; Geoffrey M.	New York	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Freedom Investments, Inc.	New York	NY			02

APPL-NO: 09/417901 [PALM]

DATE FILED: October 14, 1999

INT-CL: [07] G06 F 17/60

US-CL-ISSUED: 705/37

US-CL-CURRENT: 705/37

FIELD-OF-SEARCH: 705/25-40

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4674044</u>	June 1987	Kalmus et al.	
<input type="checkbox"/>	<u>4677552</u>	June 1987	Sibley, Jr.	
<input type="checkbox"/>	<u>5101353</u>	March 1992	Lupien et al.	
<input type="checkbox"/>	<u>5270922</u>	December 1993	Higgins	
<input type="checkbox"/>	<u>5497317</u>	March 1996	Hawkins et al.	
<input type="checkbox"/>	<u>5873071</u>	February 1999	Ferstenberg et al.	
<input type="checkbox"/>	<u>5890140</u>	March 1999	Clark et al.	
<input type="checkbox"/>	<u>5893079</u>	April 1999	Cwenar	
<input type="checkbox"/>	<u>5915209</u>	June 1999	Lawrence	

<input type="checkbox"/> 5918218	June 1999	Harris et al.	
<input type="checkbox"/> 5926801	July 1999	Matsubara et al.	
<input type="checkbox"/> 5946666	August 1999	Nevo et al.	<u>705/36</u>
<input type="checkbox"/> 6014643	January 2000	Minton	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
0401203	May 1990	EP	
WO 99/46658	September 1999	WO	

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Runkle, George, "Dripping on the Web", The Motley Fool Drip Portofio Report, available from <http://www.fool.com/> (two pages; publication date: Jan. 11, 1999).

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Netstock Direct Corp. webpage (First Time Here?), available at <http://www.netstockdirect.com/account/youraccount.asp> (one page; print date: May 20, 1999).

Netstock Direct Corp. press release webpage (Netstock Direct Teams With Norwest Shareowner Services .SM. to Offer Direct Investing Plans), available at <http://www.netstockdirect.com/press/norwestrelease> (one page; publication date: Apr. 30, 1999).

DRIP Investor webpage (DRIP Investor brings you the latest news on Dividend Reinvestment Plans), <http://www.dripinvestor.com/> (one page; print date: Jun. 9, 1999).

DRIP Investor webpage (DRIP Investor Information Center), <http://www.dripinvestor.com/info.html> (one page; print date: Jun. 9, 1999).

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ART-UNIT: 3628

PRIMARY-EXAMINER: Poinvil; Frantzy

ASSISTANT-EXAMINER: Bui; Thach H

ATTY-AGENT-FIRM: Brown Raysman Millstein Felder & Steiner LLP

ABSTRACT:

A trading server collects orders from a plurality of order terminals. Orders are aggregated by transaction type, such as buy or sell types, and by issuer. The combined orders are executed as a single transaction on an exchange.

17 Claims, 4 Drawing figures

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File: USPT

Sep 2, 2003

DOCUMENT-IDENTIFIER: US 6615188 B1

**** See image for Certificate of Correction ****

TITLE: Online trade aggregating system

Brief Summary Text (7):

With the increasing availability of online trading, many holders are demanding faster and faster trade execution. Some online brokerages even offer to waive their commission on a trade if the trade cannot be done within 60 seconds. A growing number of day traders, who buy and sell securities by the hour or minute, rarely holding securities overnight, have been requiring even faster transaction speeds, so that they can take advantage of momentary fluctuations in securities prices.

Brief Summary Text (35):

In some embodiments, trades are submitted during specified times of day, next trading day, or end of the week, independent of when an order is actually received. For example, one embodiment of the trading server might defer execution or transmission of a trade to the exchange, even if orders are outstanding, until a certain time after the exchange opens, to allow the market to stabilize from the initial opening minutes or hour. Such an embodiment might also hold orders received between a cut-off time and the close of market until the next trading day, to avoid any closing instability. Some embodiments might also provide for a cut-off, such as half an hour, between the time a trade is transmitted and the time an order is received, to allow for orderly order aggregation and to allow investors to react more slowly to market movements and new events, as is recommended by many financial advisors but not followed by many investors. Orders can be received either in specified share amounts (such as for a sale) or in specified dollar (or other currency) amounts (such as for a buy).

Detailed Description Text (21):

Staying out of the market near market opening and market closing times can further reduce trading volatility and allow for reasoned investor consideration of breaking news, even if orders would otherwise be in a condition for aggregating into a trade. For example, trading server 14 might be programmed with the following rules:

Detailed Description Text (25):

Those rules allow for the orderly aggregation of orders into trades, giving trading server 14 one full hour or more to process the information and make an orderly trade. Other time for windows and cutoffs can be used, depending on the nature of the markets, hours of operation and other factors. For example, the two windows set out in the above rules avoids a market instability that might exist at the opening bell or near the closing bell. If such instabilities no longer exist, or begin to regularly occur during a window, the windows can be changed. If a window is so narrow, given the volume handled by the trading server, the window could be expanded to allow for the trade volume to spread out more. Of course, if only one order is received for a given security in a given type, or direction (the most common directions are buy or sell), one unaggregated trade might be made to effect that order.

Detailed Description Text (45):

In the system shown in FIG. 1, the trading server submits trades at prespecified times of day. If after-hours trading becomes significant, those times of day described above can be modified to accommodate after-hours trading (e.g., having an additional trading window from 5 p.m. to 6 p.m. EST). In one variation, trades might be held (with customer agreement) until a predetermined quantity of orders is received, especially if such holding reduces the overall transaction costs associated with placing trades for the held orders and the saving is passed on to the customer. For example, if the trading server operator is charged a fixed fee per day for trading a given security, the trading server might aggregate trades over one or more days

to reduce the commission per order.

US Reference US Original Classification (12):
705/36

US Reference Group (12):
5946666 19990800 Nevo et al. 705/36

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File: PGPB

Dec 13, 2001

PGPUB-DOCUMENT-NUMBER: 20010051909
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010051909 A1

TITLE: Market program for interacting with trading programs on a platform

PUBLICATION-DATE: December 13, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Keith, Christopher	New York	NY	US

APPL-NO: 09/801588 [\[PALM\]](#)
DATE FILED: March 8, 2001

RELATED-US-APPL-DATA:
child 09801588 A1 20010308
parent continuation-in-part-of 09546031 20000410 US PENDING

INT-CL: [07] [G06](#) [F](#) [17/60](#)

US-CL-PUBLISHED: 705/37; 705/26
US-CL-CURRENT: [705/37](#); [705/26](#)

REPRESENTATIVE-FIGURES: 1

ABSTRACT:

A market process having a market methodology selected from a set of market methodologies is operative to interact with trading processes on a platform. The platform also supports platform processes for providing services to the market process and the trading processes. The trading processes interact with each other and with external markets through the market processes.

[0001] The present application is a continuation-in-part of U.S. application Ser. No. 09/546,031, filed Apr. 10, 2000, which is hereby incorporated by reference.

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File: PGPB

Dec 13, 2001

DOCUMENT-IDENTIFIER: US 20010051909 A1

TITLE: Market program for interacting with trading programs on a platform

Brief Description of Drawings Paragraph:

[0013] It is not intended that the invention be summarized here in its entirety. Rather, further features, aspects and advantages of the invention are set forth in or are apparent from the following description and drawings.

Brief Description of Drawings Paragraph:BRIEF DESCRIPTION OF THE DRAWINGSBrief Description of Drawings Paragraph:

[0036] FIG. 99 is a chart showing processing during auction discovery in system 5;

Detail Description Paragraph:

[0043] Referring now to the drawings, and in particular to FIG. 1, there is illustrated a block diagram showing the components used with the present methodology. System 5 is a general purpose computer or network of computers programmed in accordance with the present invention and functions as a platform for allowing electronic liquidity finder (ELF) programs and umpire programs to interact. The platform of system 5 embodies a protocol for standardizing market trading methodologies, order representation and processing, and data formats. System 5 provides platform services 60 to the ELFs and umpires active within system 5. Platform services 60 includes, among other things, linked order execution manager 61, platform status monitor 62, contra-party preference updating 63, system status board 64C, market status board 65, broadcast services 66 and stop order manager 67.

Detail Description Paragraph:

[0075] Request that the oU conduct an auction for its order;

Detail Description Paragraph:

[0116] "Superbook" meaning that the price is determined based on an order book and with a price improvement mechanism: an auction for the crowd of oEs registered with the umpire. The price improvement mechanism is operative during discovery and during execution. During discovery, an inquiring order ELF can indicate that it "accepts auction mode" meaning that if an order ELF in the crowd provides a better price than the superbook umpire's book, then the inquiring order ELF will accept the crowd ELF's price. During execution, just before a superbook umpire moves to booked orders at a new (worse) price to fill an active contra side order, the superbook umpire notifies order ELFs in its crowd of the opportunity to improve the price.

Detail Description Paragraph:

[0117] "Auction" meaning that the price is determined by an auction according to predetermined auction rules,

Detail Description Paragraph:

[0143] Conducting an on-demand auction to promote pairings between orders in the ELF crowd and booked orders.

Detail Description Paragraph:

[0161] Advantages of system 5 include improved market information, flexible order routing, representation of an order in multiple markets, ability to find size liquidity, reducing market and disclosure risk, ability to simultaneously execute a linked order with multiple legs, improved order management, improved market service versatility due to a range of trading, informational and advisory services, improved market connectivity with immediate connections

once on the platform of system 5, empowering users to define their own ELF's and umpires, facilitating innovation as a custom umpire can be provided inexpensively and quickly, facilitating a common liquidity pool for exchanges while maintaining independent systems, and providing a platform that facilitates competition between methodologies as opposed to promoting one or more specific methodologies:

Detail Description Paragraph:

[0183] Orders can be represented in multiple markets in a synchronized manner. Let it be assumed that one market is an order umpire on the platform of system 5, and another market is an external exchange, that the order umpire and the external exchange have respective order books, and that the order umpire and external exchange transmit messages to each other via a mirror ELF. The mirror ELF enables the order umpire and the exchange to maintain synchronization over a variety of operations, such as cancel, post, affirm and execute, via a protocol wherein the operation is conditionally performed at one market and the operation is committed after being reflected at the other market. The reflection may include canceling to allow one market to be in sole control of the order and therefore able to safely execute without chance of a duplicate execution.

Detail Description Paragraph:

Service: Crowd Auction During Discovery

Detail Description Paragraph:

[0217] All umpires are assumed to have a book of orders. Any umpire that has a crowd may choose to support auction mode price discovery, either as a default or by request from an ELF. It will be appreciated that some order processing methods are suitable for auction price discovery, such as book and superbook methods, while other order processing methods are not suitable for auction price discovery, such as periodic match methods.

Detail Description Paragraph:

[0218] When an order umpire is providing discovery with auction mode, the order umpire responds to price inquiries after an interval of up to a published delay time. During this delay time, the order umpire gives order ELF's registered in its crowd the opportunity to provide a better price than the book's price. If an order ELF in the crowd, referred to as a passive-side order ELF, provides a price better than the book's price, then the order ELF seeking discovery, referred to as an active-side order ELF, is obliged to take the price and is immediately paired with the passive-side order. Effectively, the crowd response is an order that was provoked by the active-side order ELF's auction mode discovery request. The active-side order ELF is not obliged to take the book's prices, unless the umpire has specified that if the umpire provides a price, the ELF must take the price.

Detail Description Paragraph:

Service: Crowd Auction During Execution

Detail Description Paragraph:

[0220] An umpire operating according to the superbook method will, when the order umpire is about to change to orders in its book to a new (worse) price, automatically notify its crowd of order ELF's, and each order ELF then decides whether it wants to provide a quantity of shares at an improved price for matching with the active contra side order. The superbook method is actually a combination of a book trading method and an auction trading method, with crowd auctions occurring to improve the price relative to the book's price. A superbook umpire may also support auction mode price discovery.

Detail Description Paragraph:

[0222] Some conventional trading systems support a so-called reserve book feature. A trader submits an appropriately designated order, and only a predetermined amount of the order is revealed on the public book. For example, a reserve order for 10,000 shares with 1,000 shown would place an order for 9,000 shares on the reserve book, and an order for 1,000 shares on the public book. After the 1,000 shares is executed, the reserve book would shift another 1,000 shares to the public book, and so on until the entire order was executed. These conventional systems use the same methodology for executing all portions of the order. In contrast, system 5 may execute portions of an active order in different ways: the first contra-side portions being obtained from the book and the second contra-side portions being obtained through the auction form of crowd price improvement.

Detail Description Paragraph:

[0236] The known Optimark system uses liquidity curves to match orders. Optimark is an implementation of a pattern match system, whereas BidPlus is more akin to a dutch auction in which prices come down as bidding continues.

Detail Description Paragraph:

[0260] When an umpire is about to start a process that requires it to enter the "in-process" state such as an auction or match, the umpire posts this change of state to system status board 74. Other umpires that wish to act upon an order check system status board 74 to ensure that none of the umpires at which the order is represented have gone in-process prior to the current umpire.

Detail Description Paragraph:

[0353] The first rule in Table 6 is that if the offered price is better than the market ask price by 25% and the umpire returns a price within 3 time-units, such as seconds, then take the offered price. The second rule in Table 6 is that, for any amount less than 10,000 shares, if the offered price is better than the market ask price by any amount, and the market trend is away from what would be a better price, then counter-offer by the market ask price adjusted by 0.1. The third rule in Table 6 is that, for any amount less than 10,000 shares, if the offered price is better than the market ask price by an amount, and the market trend is towards a better price, then request an auction. The fourth rule in Table 6, applied when none of the prior rules have been able to be used, is to join the crowd. Table 6 is defined so that it can be applied whether the order is to buy or sell. In other cases, a rule is written so it applies only when buying, or only when selling.

Detail Description Paragraph:

[0370] At step 340 of FIG. 16, action parameters are specified, including special representation functions such as auctions, if any, and disclosure policies operative when oE 10 is in the crowd for an order umpire. The action parameters must be consistent with the methods offered by an umpire. The following action parameters are also specified:

Detail Description Paragraph:

[0401] During auction mode discovery, an inquiring order ELF can accept auction mode pricing, meaning that if any order ELFs in the crowd for the umpire provide a better price than what is in the book, the inquiring order ELF must accept the crowd price. As an example, assume that inquiring oE 10 asks superbook oU 30 for a quote for 10,000 shares of the symbol being traded at oU 30, and states that oE 10 accepts auction mode. Several scenarios are possible:

Detail Description Paragraph:

[0411] At step 685, oE 10 obtains the values, if any, that the decision logic will need from various evaluation umpires. At step 690, oE 10 invokes decision engine 100 to create the action list including the parameters for the umpires in the action list, such as minimum lot size, and reserve price. The decision process may involve a parameter from other sources. The parameter may be found in, for example, umpires table 140, and/or an externally supplied parameter as referred to in decision table 110. An example of a parameter is whether an umpire will make a payment or give a credit to oE 10 for placing its order with that umpire. Another source of parameters is global parameters accumulated and maintained in ELF data structure 145. The decision logic at step 690 may also include rules for deciding ties based on characteristics of an umpire, or preference for executing portions of an order at the same umpire and so on. In addition, if the decision logic at step 690 does not find enough quantity to fill the entire order from the price response table, it may add entries in the action list to direct oE 10 to take other actions such as joining the crowd or posting at an umpire, triggering an auction, and so on. At step 691, if the action is to post an order to an umpire, oE 10 creates an order tail, shown in Table 4C, for this order and appends it to each action list that posts the order to any umpire. Other actions, such as sending a stop request order or a stop exercise order, do not require an order tail. At step 692, oE 10 applies the just built action list to order control table 130, creating an entry for each umpire at which some action will be taken.

Detail Description Paragraph:

[0413] If the action relates to an order umpire, processing proceeds to step 706, step 708 and then to step 720. At step 706, oE 10 uses the order umpire-specified method for acting, such as taking, posting, requesting an auction, requesting a stop, exercising a stop, counter-offering or joining the crowd. At step 708, oE 10 updates its internal control structures, such as its order control table, to reflect the result of its activity.

Detail Description Paragraph:

[0467] Auction among the crowd of oEs registered at oU 30;

Detail Description Paragraph:

[0472] The arrival of an order that signals an auction process to hold an auction.

Detail Description Paragraph:

[0537] At step 1212, oU 30 receives an auction request from an oE, invokes the logic shown in FIG. 82, and then proceeds to step 1214.

Detail Description Paragraph:

[0542] FIG. 62 is a flowchart showing method-specific processing for responding to a discover request when oU 30 provides prices using the book method, the superbook method or an auction method. At step 5305, oU 30 uses its own its umpire decision table and decision engine 100, as generally shown in FIG. 25, to set the parameters for this ELF.

Detail Description Paragraph:

[0544] At step 5320, oU 30 checks whether it supports auction mode. If not, processing proceeds to step 5340. If oU 30 supports auction mode, and auction mode has been requested by the inquiring order ELF, then at step 5325, oU 30 notifies its crowd of the price(s) it proposes to provide to the inquiring order ELF and obtains responses, if any, from its crowd. The crowd responses must improve the price provided by oU 30. The crowd responses are ordered by price. At step 5335, oU 30 executes the crowd responses with the order ELF's discovery request, treated as an order, up to the size of the discovery request. If there is more crowd quantity than is needed for the inquiring ELF, oU 30 follows its specified procedure for allocating quantity, such as proportionally allocating the quantity or following a first-come-first-served strategy.

Detail Description Paragraph:

[0545] A discovery auction may occur at computer processing speeds, when all crowd ELFs are able to make decisions without guidance from their order rooms. However, when order room guidance is involved, the discovery auction occurs at much slower human response times.

Detail Description Paragraph:

[0554] If, at step 1262, it was determined that the affirmed quantity at the best price was not executable, then at step 1268, oU 30 releases the affirmed quantity. oU 30 will now attempt to execute the quantity at another price. Since its price is changing, and oU 30 is following the superbook method, oU 30 will advise its crowd of a price improvement opportunity. The crowd auction will take time, particularly if the auction is conducted at human response times, and the quantity at the best price is available to other order ELFs while an auction is occurring for the present active side order ELF.

Detail Description Paragraph:

[0576] Table 12E shows pertinent portions of Reg-1 after pairing the orders at the best price of 17. Accordingly, oU 30 conducted a price improvement auction among its crowd of registered ELFs, got a response, indicated as order GG, for 100 shares at 17.2, and paired the crowd response with the active side order. So far, 500 shares of the 800 shares in the active side order have been paired.

Detail Description Paragraph:

[0577] Table 12F shows pertinent portions of Reg-1 during subsequent processing of FIG. 65. In this example, oU 30 again got order EE and noticed that the price had changed, from 17.2 to 17.3. Accordingly, oU 30 conducted a price improvement auction among its crowd of registered ELFs, but got no responses. So, order EE was returned as the next order. However, the quantity of order EE exceeded the quantity of the active side order, so only a portion of order EE was paired. At this point, all 800 shares in the active side order have been paired. At step 1405 of FIG. 70, the book is updated to reduce the quantity of order BB by 100 shares, remove orders CC and DD, and reduce the quantity of order EE by 300 shares. The holds and in-process indications for all orders, as adjusted, are released.

Detail Description Paragraph:

[0592] FIG. 82 is a flowchart showing how oU 30 responds to receiving an auction request from an oE. At step 1710, oU 30 tells the oEs in its crowd that an auction is occurring. All crowd

interaction is done under the in-process state, i.e., if an oE in the crowd bids during and if the order is paired, the oE will not be given a chance to affirm its order prior to the pairing or to cancel. At step 1720, oU 30 checks whether any of the oEs in its crowd have responded. If there were no responses from the crowd, at step 1725, oU 30 advises the oE that requested the auction of the absence of responses. If there were response(s) from the crowd, at step 1730, oU 30 returns the responses to the order ELF that requested the auction. The bidding ELFs are notified of the outcome and the auction request processing is now complete.

Detail Description Paragraph:

[0600] FIG. 86 is a flowchart of sealed-bid auction processing by oU 30. Sealed-bid auction processing is a forced take situation. Generally, an active side oE will have requested an auction from oU 30. At step 1835, oU 30 selects an order from the book for auction, skipping each order with at least one umpire in its order tail that was in-process before this umpire started, and publishes the reserve price. At step 1840, oU 30 checks whether there is a crowd registered therewith. If there is no crowd, then processing proceeds to step 1860. If there is a crowd, then at step 1845, oU 30 obtains bids from the crowd for the active side order, using the published reserve (or upset) price. At step 1850, oU 30 validates that the bids from the crowd, if any, are better than the reserve price, and passes only bids that improve the reserve price to step 1852. If ELF filtering is on, at step 1852, oU 30 checks if the bids are from ELFs incompatible with the one whose order is up for auction and ignores them if so.

Detail Description Paragraph:

[0601] After the best price has been discovered as described above, at step 1860, if there were any bids, oU 30 fills the order. At step 1870, oU 30 checks whether there are more orders in its book. If so, processing returns to step 1835. If not, sealed-bid auction processing is complete.

Detail Description Paragraph:

[0705] Use Case: Voluntary Auction Mode During Discovery

Detail Description Paragraph:

[0706] FIG. 99 illustrates how an active-side order ELF, oE 10, a book umpire with a crowd, oU 30, and a crowd order ELF, oE 12, co-operate during auction mode discovery. In this example, oE 10 asks oU 30 for discovery with auction mode. oE 12 improves upon oU 30's book price, and oE 10 must take oE 12's price.

Detail Description Paragraph:

[0707] At step 4600, oE 10 receives an order from order room 70, see FIG. 21, step 410; FIG. 22, step 435; and FIG. 23, step 455, and at step 4605, creates a discover list, see FIG. 23, steps 470 and 520. As part of creating a discover list, at step 4610, oE 10 sends a discover request to order umpire 30, operative according to the superbook method, accompanied by an indication that oE 10 accepts auction mode. See FIG. 23, step 525, and FIG. 26, step 645.

Detail Description Paragraph:

Use Case: Automatic Auction Mode During Execution (Superbook)

Detail Description Paragraph:

[0759] Although an illustrative embodiment of the present invention, and various modifications thereof, have been described in detail herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to this precise embodiment and the described modifications, and that various changes and further modifications may be effected therein by one skilled in the art without departing from the scope or spirit of the invention as defined in the appended claims.

Detail Description Table CWU:

1TABLE 1 T1 Method T2 Methodology 0 book 0 standard book Infinity book 0 blind book value auction Not applicable Dutch auction value external value Not applicable match value negotiation (inquiry type) 0 inquiry value superbook 1 representation

Detail Description Table CWU:

6TABLE 4B Field Name Description Instrument type Type of instrument in this order, e.g., level of price granularity (eighths, tenths). Symbol The symbol used to represent the individual item being bought or sold, e.g., IBM Side Buy, Sell, or Sell-Short Price Price is the amount of one trading unit of the item that the buyer/seller represented by this order is willing to

pay/accept for the trade and to disclose to the public. In the case of an auction, this would be either the reserve (upset) price or the opening bid price. Size The number of trading units being bid/offered. Minimum Lot Minimum lot size of the order. If a trade occurs where Size multiple contra orders are needed to fill this order, this is the minimum size of the combined contra orders. Order Type Market, Limit, Stop, Trial, and so on Time In Force How long the order is valid, i.e., At Opening, Day, Good 'til cancelled, Immediate or Cancel, Fill or Kill, and so on.

Detail Description Table CWU:

10TABLE 6 Security Size Price Action XYZ any ask improved 25% and T2 < 3 take XYZ <10,000 ask improve any & (trend = away) counter-offer (ask improve .1) XYZ <10,000 ask improve any & (trend = toward) request auction XYZ any any crowd

Detail Description Table CWU:

11TABLE 7 Security Size Price Action XYZ any ask improved 25% take XYZ < (ask improve any) & counter-offer (ask improve 10%) 10,000 (offered improved twice then (take if 5% over previous within approved price) offered) XYZ < ask improve any & request auction 10,000 (trend = toward) XYZ any any order room

Detail Description Table CWU:

12TABLE 8 Field Name Description Name The name of the Umpire for this row of the table. Method The pricing method this Umpire uses. Method The meaning of this field depends on the method. An example would be the Modifier rebate paid by this Umpire for each trade executed with him. Another example is whether auction mode during discovery is supported. T1 How long this umpire takes to complete discovery. In-Process The maximum amount of time that the Umpire will require when it is in- Time process. An example is how long this umpire takes to run an auction. Stop fee The charge an umpire levies per share for issuing a stop. T2 How long prices obtained during discovery are valid. Values may be "soft," meaning that the price is an indication only, or "instant," meaning that the price is good for long enough to get electronic confirmation, or the length of time that the price will be held. Code (Y/N) Does this Umpire return codes for prices. Alpha (Y/N) Does this Umpire return alphas for prices. Value (Y/N) Does this Umpire return values for prices. Depth How deep will the Umpire let this order ELF look into its book. Packages Whether this Umpire supports (within this same Umpire) linked orders. Contra (Y/N) Will this Umpire disclose who the contra parties are Discovery Posting Regular or first look (OTC). Under first look posting mode, if an order is Mode posted inside the market, the ELF representing the best bid or offer on the other side will be given a period of time to see the new order before it is visible to others. Market Open The time the market opens. Time Market Close The time the market closes. Time Table of The trading symbols that this Umpire handles, and their current status, i.e., Symbols trading suspended.

Detail Description Table CWU:

13TABLE 9 Field Name Description Symbol The symbol used to represent the actual item being bought or sold. Side Buy, Sell, or Sell-Short Size The number of trading units being bid or offered. Cumulative Total number of trading units represented by all entries Size in the price response table up to and including this entry Price The amount of one trading unit of the item that the contra is willing to pay/accept for the trade. Code A private code defined between a given umpire and ELF, indicating, for example, how much will be paid/accepted for a trade, or that the umpire will meet the "Best market price." Alpha An alphanumeric message with information, for example, on how to proceed with the trade. Such as "Call Jim @ 212-343-9410." Cumulative Weighted average price of all trading units represented Average by all entries in the price response table up to and Price including this entry Umpire The name of the umpire from which this price came. Name

CLAIMS:

30. The method of claim 1, wherein the market methodology selected from at least two of book, book with crowd price improvement notification, auction, match, and negotiation.

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L17: Entry 9 of 11

File: PGPB

Jul 11, 2002

DOCUMENT-IDENTIFIER: US 20020091624 A1
TITLE: Global electronic trading system

Summary of Invention Paragraph:

[0004] Morris, Jennifer, "Forex goes into future shock", Euromoney, October 2001, gives a general description of several computerized foreign exchange platforms, including one described in the present patent application.

Summary of Invention Paragraph:

[0008] Methods, systems, and computer readable media for facilitating trading two items (L,Q) from the group of items comprising commodities and financial instruments. At least two agents (2) want to trade some instrument L at some price quoted in terms of another instrument Q. The exchange of L and Q is itself a financial instrument, which is referred to as a traded instrument. A trading channel (3) between the two agents (2) allows for the execution of trades. Associated with each channel (3) are trading limits configured by the two agents (2) in order to limit risk. A central computer (1) coupled to the two agents (2) is adapted to convey to each agent (2) current tradable prices and available volumes for the exchange of L for Q and for the exchange of Q for L, taking into account the channel (3) trading limits. The central computer (1) facilitates trades that occur across a single trading channel (3) and trades that require the utilization of multiple trading channels (3).

Brief Description of Drawings Paragraph:

BRIEF DESCRIPTION OF THE DRAWINGS

Brief Description of Drawings Paragraph:

[0009] The file of this patent or application contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawings will be provided by the USPTO upon request and payment of the necessary fee.

Brief Description of Drawings Paragraph:

[0010] These and other more detailed and specific objects and features of the present invention are more fully disclosed in the following specification, reference being had to the accompanying drawings, in which:

Detail Description Paragraph:

[0048] By way of example, the application highlighted most often herein is the spot foreign exchange (spot FX) market, but it must be understood that the present invention has applicability to trading in any type of over-the-counter commodity or financial instrument, including physical commodities, energy products (oil, gas, electricity), insurance and reinsurance products, debt instruments, other foreign exchange products (swaps), and compound instruments and other derivatives composed or derived from these instruments.

Detail Description Paragraph:

[0049] A trade is the exchange of a lot of instrument L for a quoted instrument Q. The lot instrument L is traded in an integral multiple of a fixed quantity referred to as the lot size. The quoted instrument Q is traded in a quantity determined by the quantity of the lot instrument L and the price. The price is expressed as Q per L. In a spot FX trade, the lot instrument L and the quoted instrument Q are implicit contracts for delivery of a currency on the "spot" date (typically two business days after the trade date).

Detail Description Paragraph:

[0075] FIG. 1 illustrates the simplest atomic unit, type 0. A first agent 2(1) and a second agent 2(2) wish to trade at any given time some number of round lots of instrument L in

exchange for a quantity of another item Q, which we refer to as the quoted instrument or quoted currency. A trading channel 3 (account) between the two agents 2 allows for the execution of the trades and settlement of the underlying instruments. Inherent in the trading channel 3 are flow limits (trading limits) on the items L, Q being traded and limits on any underlying instruments exchanged upon settlement of the L, Q trade. A central computer 1, under control of the operator or owner of the system, is coupled to the two agents 2. The computer 1 is adapted to convey to each agent 2 current bid orders and offer orders originating from the other participating agent 2. The current set of tradable bid and offered prices and sizes is constrained by the trading channel's trading limits, and is preferably conveyed in the form of a custom limit order book 24, 25 for each agent 2, as will be more fully described below. The custom limit order book 24, 25 is a chart, typically displayed on the agent's computer, of a preselected number of bids and offers for the instrument pair L, Q in order of price, and within price, by date and time (oldest first).

Detail Description Paragraph:

[0084] This "mini-exchange" has the liquidity of the natural supply and demand of the entire client 5 base, combined with the market-making liquidity that the credit-bridging agent 5 would be supplying to its clients 4 ordinarily. It is certainly expected, and beneficial to the overall liquidity, that the credit-bridging agent 5 will be able to realize arbitrage profits between the prices posted by its clients 4 and the prices available to the credit-bridging agent 5 through other sources of liquidity. In fact, there may be instances in some markets where clients 4 are also able to arbitrage against other trading systems.

Detail Description Paragraph:

[0089] Thus is created a price-discovery mechanism for end-users 2 with direct transparency between entities 2 wishing to take opposite sides in the market for a particular instrument. The present invention encompasses decentralized operation of an arbitrary number of separate, type-1 and type-2 atomic units. Efficient price discovery is provided to the end user 2 in a decentralized liquidity rich auction environment, leveraging existing relationships, and co-existing with and indeed benefiting from traditional trading methodologies.

Detail Description Paragraph:

[0090] Furthermore, an arbitrary number of different type 0, type 1, and type 2 atomic units may be interconnected, bottom-up, as illustrated in FIG. 6, to provide, at all times, a liquidity rich efficient price-discovery mechanism to the subscribing agents 2, enabling more and more agents 2, across different atomic types, to conduct efficient direct auctions with each other directly. The various atomic units may be interconnected into a molecular credit-network.

Detail Description Paragraph:

[0093] Each connected piece of FIG. 6 maintains full transparency of orders posted on computer 1 to all financial institutions 5 and clients 4 who are on any unexhausted credit path 3 to the posting entity 2. Each of the entities 2 who are able to see the posted order are in effect competing, through the reverse auction, for that particular deal, enabling further efficient price-discovery to the posting entity 2.

Detail Description Paragraph:

[0101] For example, in FIG. 7 we consider a small network of foreign exchange players: banks 5 (B) and 5(C), which have a credit relationship with each other, and clients 4(A) and 4(D), who have margin placed with banks 5(B) and 5(C), respectively (we leave the margin currency and traded instrument unspecified). The specified input credit limits are specified as traded instrument L:Q credit limits (just one way of specifying input credit limits out of eight possible ways enumerated in the present patent application). Client 4(A)'s margin allows it to trade +/-10M with 5(B), 5(B)'s relationship allows it to trade +/-50M with 5(C), and 5(D)'s margin allows it to trade +/-5M with 5(C). This information is supplied to computer 1, which draws FIG. 7 from said information.

Detail Description Paragraph:

[0116] Each agent 2 may store its private key on a tamper-resistant hardware device such as a smartcard, protected by a password. The combination of a physical token (the card) with a logical token (the password) ensures two levels of security. The hardware token may contain a small CPU that allows it to perform the necessary cryptographic operations internally, so that the agent's private key never leaves the smartcard. In a preferred embodiment, computer 1 handles bulk encryption/decryption using symmetric key cryptography after the slower public key

cryptography has been used to exchange a session key between agent 2 and computer 1.

Detail Description Paragraph:

[0123] FIG. 11 is a deal fulfillment (flow) graph, illustrating the flow in the lot instrument. The lot instrument L is the portion of the traded instrument that has to be traded in a round lot, typically a multiple of a million. The quoted instrument Q is that portion of the instrument being traded that is expressed as the lot instrument times a price. In this example, agent 4(2) buys 10M Euros using U.S. dollars at an exchange rate of 0.9250 from agent 4(1). Since the Euro is the lot currency in this example, it has to be specified in a round lot (multiple of 1 million Euros). F(L), the lot size (volume), is 10 million and F(Q), the quoted volume, is 9,250,000. In this example, there are three intermediaries (middlemen): agents 5(1), 5(2), and 5(3). Only credit-bridging agents 5 can be middlemen. For purposes of simplification, we show on FIG. 11 the flow of just the lot instrument L. There is also a counterflow in the quoted instrument Q, which can be derived from the lot flow and the traded price. For example, on the edge 3 between node 5(1) and 4(2,) 2M represents the flow of 2 million Euros from agent 5(1) to agent 4(2), as well as the counterflow of 1,850,000 U.S. dollars from agent 4(2) to agent 5(1).

Detail Description Paragraph:

[0126] FIG. 13 illustrates log-in dialog box 21. Field 41 allows agent 2 to type in his name, thus identifying the account and trader. Field 42 is an optional challenge field, provided for security purposes. An appropriate response from the agent 2 to meet the challenge might include presentation of a password, key, or digital certificate via a hardware token. Field 43 is where agent 2 enters his password. Field 44 is where agent 2 enters the address of central computer 1. In the case of an Internet connection, the URL of computer 1 is specified here. The data exchange between agent 2 and central computer 1 is encrypted, e.g., by a SSL (Secure Socket Layer) connection. Field 45 is a scrolling message log showing status and notification of errors during the log-in process.

Detail Description Paragraph:

[0130] FIG. 16 illustrates net exposure monitor 35. Each entry 81 gives the current exposure for each account, broken down by traded instrument. Field 82 ("min" and "max") shows asymmetric net position limits on a per-instrument basis. Field 83 ("current") shows a real-time update of net position. Field 84 shows a graphical representation of net position.

Detail Description Paragraph:

[0155] FIG. 28 illustrates how computer 1 calculates the position limit for the quoted instrument, i.e., how computer 1 performs step 208 of FIG. 26. Other than the fact that Q is substituted for L, the method described in FIG. 28 is identical to that described in FIG. 27, with one exception: in step 259 (analogous to step 239 of FIG. 27), we convert from the quoted instrument to the lot instrument, because we want everything expressed in terms of the lot instrument once we get to the higher level flowchart (FIG. 26). Therefore, in step 259, X and Y are each multiplied by a "fixed rate Q:L" (exchange rate). This exchange rate is fixed for a certain period of time, e.g., one hour or one day, and may be different for different accounts at the same moment in time.

Detail Description Paragraph:

[0172] The method starts at step 351. At step 352, central computer 1 issues an electronic deal ticket 353 to an auditor. The auditor is a trusted third party, e.g., an accounting firm. Ticket 353 has a plaintext portion and an encrypted portion. The plaintext gives the ticket ID, and the time and date that the ticket 353 is generated. The encrypted portion states that agent B bought F.sub.L for F.sub.Q from agent S for settlement at T. Deal ticket 353 is digitally signed by central computer 1 for authentication purposes, and encrypted by central computer 1 in a way that the auditor can decrypt the message but central computer 1 cannot decrypt the message. This is done for reasons of privacy, and can be accomplished by computer 1 encrypting the message using the public key of the auditor in a scheme using public key cryptography.

Detail Description Paragraph:

[0173] At step 354, computer 1 issues an "in" flow ticket 355 to buyer B and to the auditor. Flow ticket 355 contains a plaintext portion and an encrypted portion. The plaintext gives the ticket ID, the time and date the ticket 355 is generated, and the name of agent B. The encrypted portion states that you, agent B, bought F.sub.L for F.sub.Q from counterparty S for settlement at T. Ticket 355 is digitally signed by computer 1 and encrypted in such a way that it may be decrypted only by agent B and by the auditor, not by computer 1. Two different

encryptions are done, one for agent B and one for the auditor.

Detail Description Paragraph:

[0174] At step 356, computer 1 issues an "out" flow ticket 357 to seller S and to the auditor. Out flow ticket 357 contains a plaintext portion and an encrypted portion. The plaintext gives the ticket ID, the time and date of issuance, and the name of agent S. The encrypted portion states that you, agent S, sold F.sub.L for F.sub.Q to counterparty B for settlement at T. Ticket 357 is digitally signed by computer 1 and encrypted only to agent S and to the auditor, not to computer 1. Two different encryptions are used, one to agent S and one to the auditor.

Detail Description Paragraph:

[0175] Tickets 353, 355, and 357 can include the digital identity of the individual within the agent 2 whose smartcard was plugged into the agent's computer when the transaction was made. The method ends at step 358.

Detail Description Paragraph:

[0177] The method begins at step 361. At step 362, computer 1 issues deal ticket 363 to the auditor. Ticket 363 contains a plaintext portion and an encrypted portion. Ticket 363 is digitally signed by computer 1 and encrypted only to the auditor. The encrypted portion states that agent B bought F.sub.L for F.sub.Q from agent S for settlement at T, and that the deal was fulfilled by multiple direct trades in D, the directed deal fulfillment graph, i.e., the type of graph that is illustrated in FIG. 11. In other words, the auditor knows every agent 2 in the chain.

Detail Description Paragraph:

[0182] At step 380, computer 1 reports an "in" flow ticket 377 to agent V, because the lot currency is flowing in to agent V. Flow ticket 377 contains a plaintext portion and an encrypted portion. The plaintext includes the ticket ID, the time and date of issuance, and the name of agent V. The encrypted portion states that you, agent V, bought F of L for F times P of Q from counterparty X for settlement at T. In this case, counterparty X is just the immediate neighbor 2 to agent V, preserving anonymity. Ticket 377 is digitally signed by computer 1 and encrypted by computer 1 only to agent V and to the auditor, not to computer 1. Two encryptions are performed, one to agent V and one to the auditor.

Detail Description Paragraph:

[0183] At step 379, computer 1 generates an "out" flow ticket 378 to agent V. Ticket 378 contains a plaintext portion and an encrypted portion. The plaintext includes the ticket ID, the time and date of issuance, and the name of agent V. The encrypted portion states that you, agent V, sold F of L for F times P of Q to counterparty X for settlement at T. Again, counterparty X is just the immediate neighbor 2 to agent V, preserving anonymity. Flow ticket 378 is digitally signed by computer 1 and encrypted by computer 1 only to agent V and to the auditor, not to computer 1. Two encryptions are performed, one to agent V and one to the auditor.

Detail Description Paragraph:

[0184] Tickets 363, 377, and 378 can include the digital identity of the individual within agent 2 whose smartcard was plugged into the agent's terminal when the transaction was made.

CLAIMS:

37. The system of claim 19 wherein, after each trade between a buying agent and a selling agent, the central computer issues a deal ticket to an auditor, an in flow ticket to the buying agent, and an out flow ticket to the selling agent.

38. The system of claim 37 wherein: the trade is a multi-hop trade; there is at least one intermediate agent situated in the flow between the buying agent and the selling agent; the buying agent and the selling agent are unknown to each other; the deal ticket contains the identity of each intermediate agent; the in flow ticket contains the identity of just an immediate neighboring agent; and the out flow ticket contains the identity of just an immediate neighboring agent.

39. The system of claim 37 wherein each ticket is digitally signed by the central computer.

40. The system of claim 37 wherein each ticket is encrypted by the central computer.

41. The system of claim 40 wherein the in flow ticket is encrypted to the buying agent and to the auditor, but not to the central computer.

42. The system of claim 40 wherein the out flow ticket is encrypted to the selling agent and to the auditor, but not to the central computer.

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